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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,891	03/15/2002	Thomas Andrew Strasser	PH01-00-04b	5412

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EXAMINER	
LI, SHI K	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/099,891	STRASSER ET AL.	
	Examiner	Art Unit	
	Shi K. Li	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-15,18,30-46 and 48-50* is/are rejected.

7)☒ Claim(s) *12,16,17,19-29 and 47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 10, 13, 15, 18, 40, 46 and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weverka et al. (U.S. Patent 6,501,877 B1) in view of Chu et al. (K. Chu et al., "Scalable Optical-Path Supervisory Scheme Using Pilot Tones and Channel Equalizers", Electronics Letter, Vol. 36, No. 9, 27th April 2000) and Jin et al. (U.S. Patent 6,256,430 B1).

Regarding claims 1, 40-41 and 44-45, Weverka et al. discloses in FIG. 1 a wavelength router comprising an input port 12, a plurality of output ports 15(1) to 15(M), a plurality of mirrors 30(1) to 30(N) for selectively direct a channel wavelength to any one of the output ports. The difference between Weverka et al. and the claimed invention is that Weverka et al. does not teach a variable attenuation. Chu et al. discloses in FIG. 1 an optical crossconnect comprising an OXC controller and a plurality of channel equalizers (CE). One of ordinary skill in the art would have been motivated to combine the teaching of Chu et al. with the wavelength router of Weverka et al. to equalize wavelength channels because unequal power of different wavelength channels cause undesirable non-linear effects and a maximum transmission distance of WDM signal is limited by the wavelength channel having the lowest power. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to equalize power levels of wavelength channels, as taught by Chu et al., in the wavelength router of Weverka et al.

because unequal power of different wavelength channels cause undesirable non-linear effects and a maximum transmission distance of WDM signal is limited by the wavelength channel having the lowest power.

The combination of Weverka et al. and Chu et al. still fails to teach that the plurality of mirrors provide variable of attenuation. Jin et al. teaches an optical crossconnect. Jin et al. teaches in col. 4, lines 42-48 that variable attenuation can be introduced by intentional misalignment of light. One of ordinary skill in the art would have been motivated to combine the teaching of Jin et al. with the modified wavelength router of Weverka et al. and Chu et al. because using misalignment of mirrors for adjust attenuation eliminates external variable attenuators and, therefore, reduces system cost and increases system reliability. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust attenuation by intentional misalignment of the mirrors, as taught by Jin et al., in the modified wavelength router of Weverka et al. and Chu et al. because using misalignment of mirrors for adjust attenuation eliminates external variable attenuators and, therefore, reduces system cost and increases system reliability.

Regarding claim 10, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claim 13, Weverka et al. teaches in FIG. 1 a free space region between input port and output ports and between input port and wavelength selective elements.

Regarding claim 15, Weverka et al. teaches in FIG. 1 retro-reflecting wavelength channels by mirrors 30.

Regarding claim 18, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claims 46 and 48, Weverka et al. teaches in FIG. 1 a free space region.

Regarding claim 49, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claim 50, Weverka et al. teaches in col. 9, lines 5-7 MEMS technology for the mirrors.

3. Claims 1-11, 13-15, 18, 30-34, 36-39, 40-46 and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka (U.S. Patent 6,094,296) in view of Weverka et al. (U.S. Patent 6,501,877 B1) and Jin et al. (U.S. Patent 6,256,430 B1).

Regarding claims 1, 40-41 and 44-45, Kosaka discloses in FIG. 10 an optical amplifier comprising an input monitor unit 36, an amplifier unit 9, a power adjusting unit 8, an output monitor unit 34 and a control unit 14. The difference between Kosaka and the claimed invention is that Kosaka does not teach an optical switch for adjusting attenuation.

Weverka et al. teaches in FIG. 1 a wavelength router comprising an input port 12, a plurality of output ports 15(1) to 15(M), a plurality of mirrors 30(1) to 30(N) for selectively direct a channel wavelength to any one of the output ports. Jin et al. teaches an optical crossconnect. Jin et al. teaches in col. 4, lines 42-48 that variable attenuation can be introduced by intentional misalignment of light. One of ordinary skill in the art would have been motivated to combine the teaching of Weverka et al. and Jin et al. with the optical amplifier of Kosaka because the combination of Weverka et al. and Jin et al. replaces the demultiplexer, gain adjusters, multiplexer and, therefore, reduces the number of components and increases system

reliability. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a wavelength router with adjustable misalignment for gain adjustment, as taught by Weverka et al. and Jin et al., in the optical amplifier of Kosaka because the combination of Weverka et al. and Jin et al. replaces the demultiplexer, gain adjusters, multiplexer and, therefore, reduces the number of components and increases system reliability.

Regarding claims 2-5, Kosaka teaches in FIG. 10 monitoring arrangement for determining power level at input port and output ports. Kosaka teaches in FIG. 11 a plurality of detectors for measuring power level of each of the wavelength channels.

Regarding claims 6-7, Weverka et al. teaches tiltable mirrors 30(1) to 30(N). It is well known in the art to add collimating lens before the mirror for improving optical performance.

Regarding claims 8-9, Kosaka teaches in FIG. 11 that the detector positions are independent of the attenuators.

Regarding claim 10, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claim 11, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claims 13-14, Weverka et al. teaches in FIG. 1 a free space region between input port and output ports and between input port and wavelength selective elements.

Regarding claim 15, Weverka et al. teaches in FIG. 1 retro-reflecting wavelength channels by mirrors 30.

Regarding claim 18, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claims 30 and 36, Kosaka teaches in FIG. 10 optical amplifier system.

Regarding claim 31, Kosaka teaches in FIG. 17 an optical amplifier system with a second amplifier coupled to the input of gain adjuster.

Regarding claims 32 and 37, Jin et al. teaches to adjust attenuation by adjust misalignment.

Regarding claim 33, Kosaka teaches in FIG. 10 input monitor unit 36.

Regarding claim 34, Kosaka teaches in FIG. 11 monitor ports 39.

Regarding claims 38-39, Kosaka teaches in FIG. 10 monitoring arrangement for determining power level at input port and output ports. Kosaka teaches in FIG. 11 a plurality of detectors for measuring power level of each of the wavelength channels.

Regarding claim 42, the attenuation of each channel in the modified wavelength router of Kosaka, Weverka et al. and Jin et al. is independent of the other channels.

Regarding claim 43, Kosaka teaches in FIG. 10 input monitor unit 36 and output monitor unit 34.

Regarding claims 46 and 48, Weverka et al. teaches in FIG. 1 a free space region.

Regarding claim 49, Jin et al. teaches to control the misalignment to obtain an adjustable attenuation.

Regarding claim 50, Weverka et al. teaches in col. 9, lines 5-7 MEMS technology for the mirrors.

4. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka, Weverka et al. and Jin et al. as applied to claims 1-11, 13-15, 18, 30-34, 36-37, 40-46 and 48-50 above, and further in view of Xiao et al. (U.S. Patent 6,721,509 B2).

Kosaka, Weverka et al. and Jin et al. have been discussed above in regard to claims 1-11, 13-15, 18, 30-34, 36-37, 40-46 and 48-50. The difference between Kosaka, Weverka et al. and Jin et al. and the claimed invention is that Kosaka, Weverka et al. and Jin et al. do not teach a network with a plurality of nodes. Xiao et al. discloses in FIG. 3 a network with a plurality of nodes each of which comprises an optical switch as illustrated in FIG. 6. One of ordinary skill in the art would have been motivated to deploy the modified optical amplifier of Kosaka, Weverka et al. and Jin et al. in the optical network of Xiao et al. because the modified amplifier provides equalized wavelength channels such that all channels have equalized performance for transmission from one network node to another. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the modified optical amplifier of Kosaka, Weverka et al. and Jin et al. in the optical network of Xiao et al. because the modified amplifier provides equalized wavelength channels such that all channels have equalized performance for transmission from one network node to another.

Allowable Subject Matter

5. Claims 12, 16-17, 19-29 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed 5 April 2006 have been fully considered but they are not persuasive.

The Applicant argues that the cited references, i.e., Weverka, Chu and Jin, teach (1) direct one of the selected channel wavelengths selected by the associated wavelength selective

element to any one of the output ports independently of all other channel wavelengths, and (2) with a selectively variable degree of attenuation. The Examiner disagrees. Weverka teaches in FIG. 1 a wavelength router comprising an input port 12, a plurality of output ports 15(1) to 15(M), a plurality of mirrors 30(1) to 30(N) for selectively direct a channel wavelength to any one of the output ports. Jin teaches in col. 4, lines 42-48 variable attenuation by intentional misalignment of light. Therefore, the references, considered as a whole, teach each and every limitation of claim 1.

7. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Chu teaches that it is desirable to equalize power for wavelength channels in optical crossconnect.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl
5 June 2006

Shi K. Li
Patent Examiner

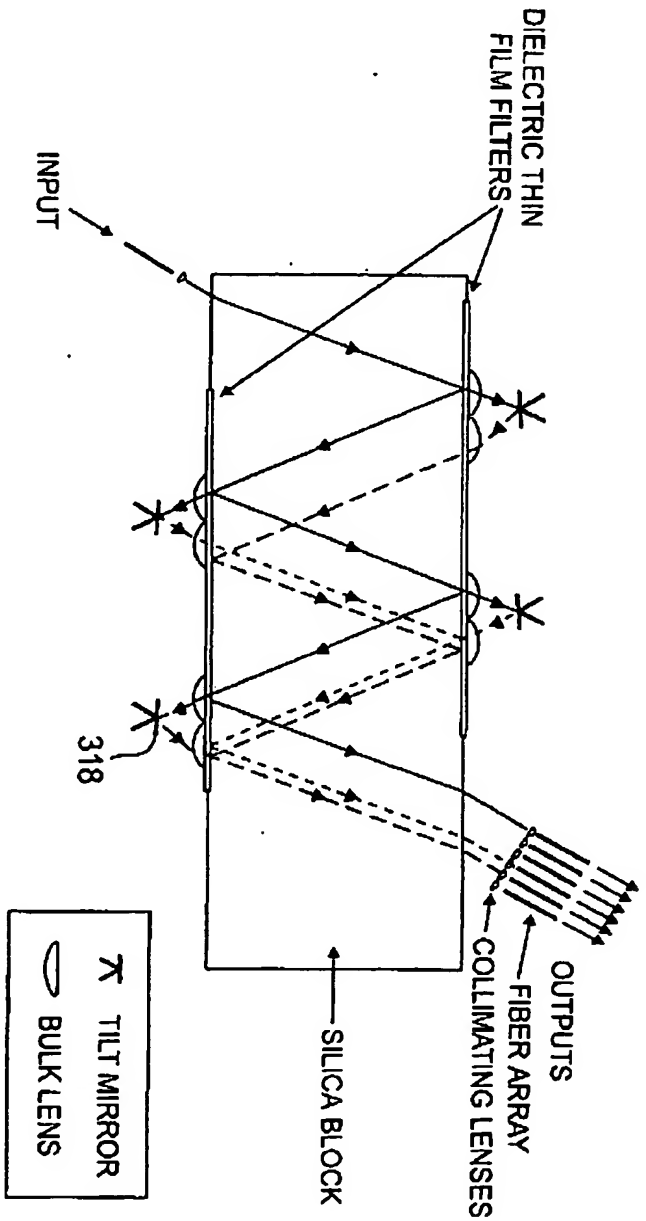


FIG. 1

Replacement Sheet

6/5/06

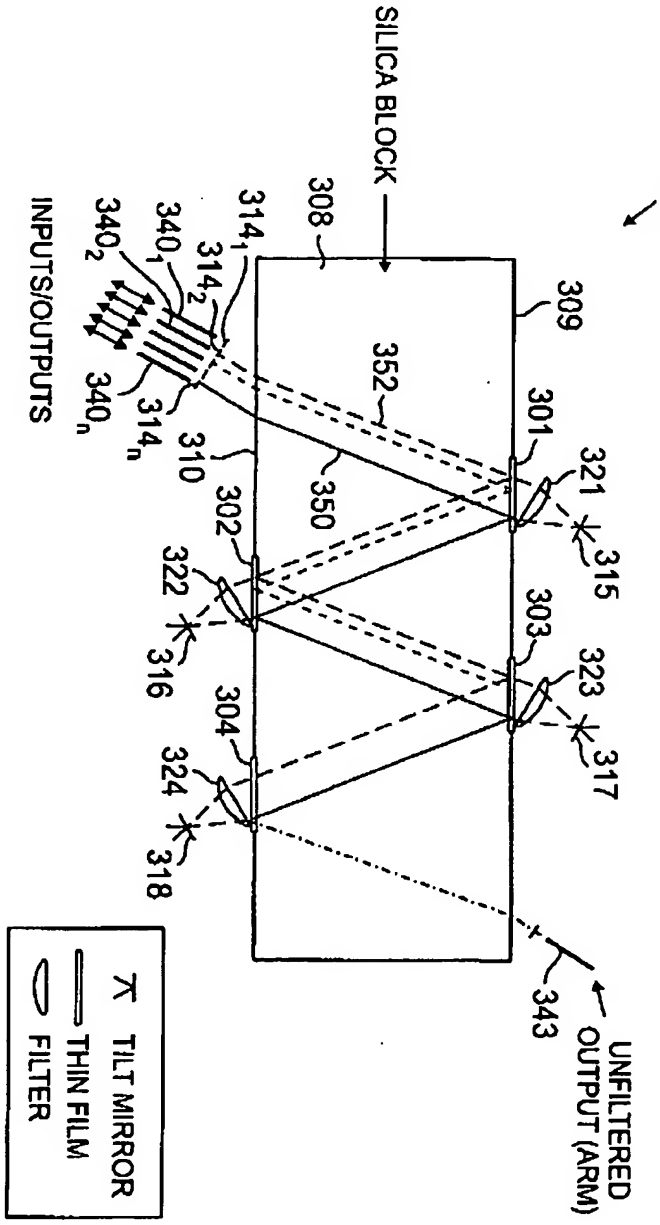


FIG. 2

BIDIRECTIONAL INPUTS/OUTPUTS WITH INDEPENDENT WAVELENGTH DISTRIBUTION

Replacement Sheet

6/5/06

6/5/06 dk

Replacement Sheet

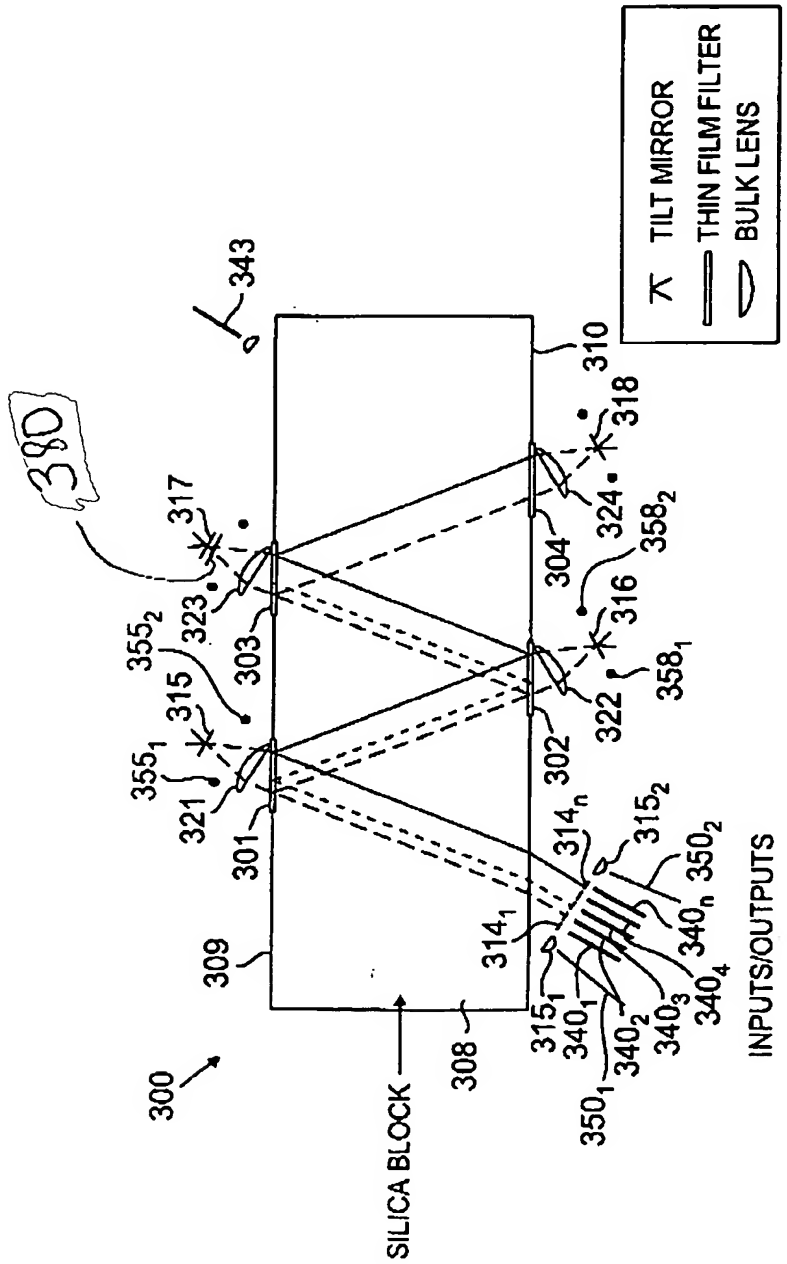


FIG. 3

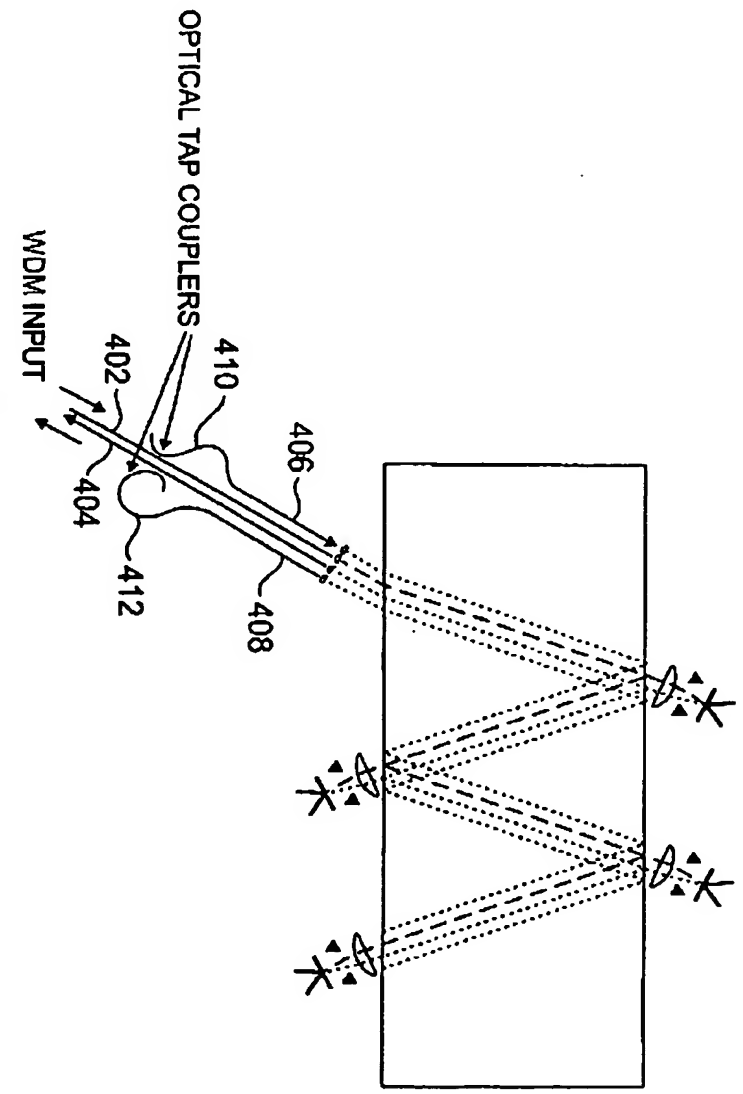


FIG. 4

OPTICAL TAP CONFIGURATION TO MONITOR ANY INPUT AND OUTPUT PORTS ON A PER WAVELENGTH BASIS TO VERIFY SWITCH LOSS AS WELL AS SIGNAL PRESENCE AND POWER

Replacement Sheet

6/5/06 AK

Replacement Sheet

6/5/06 Sk

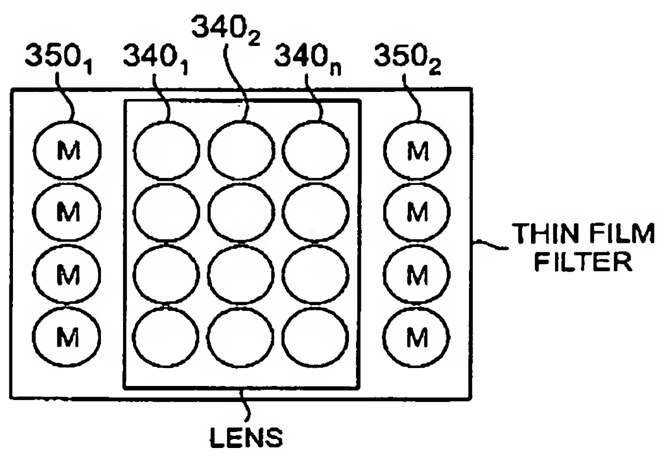
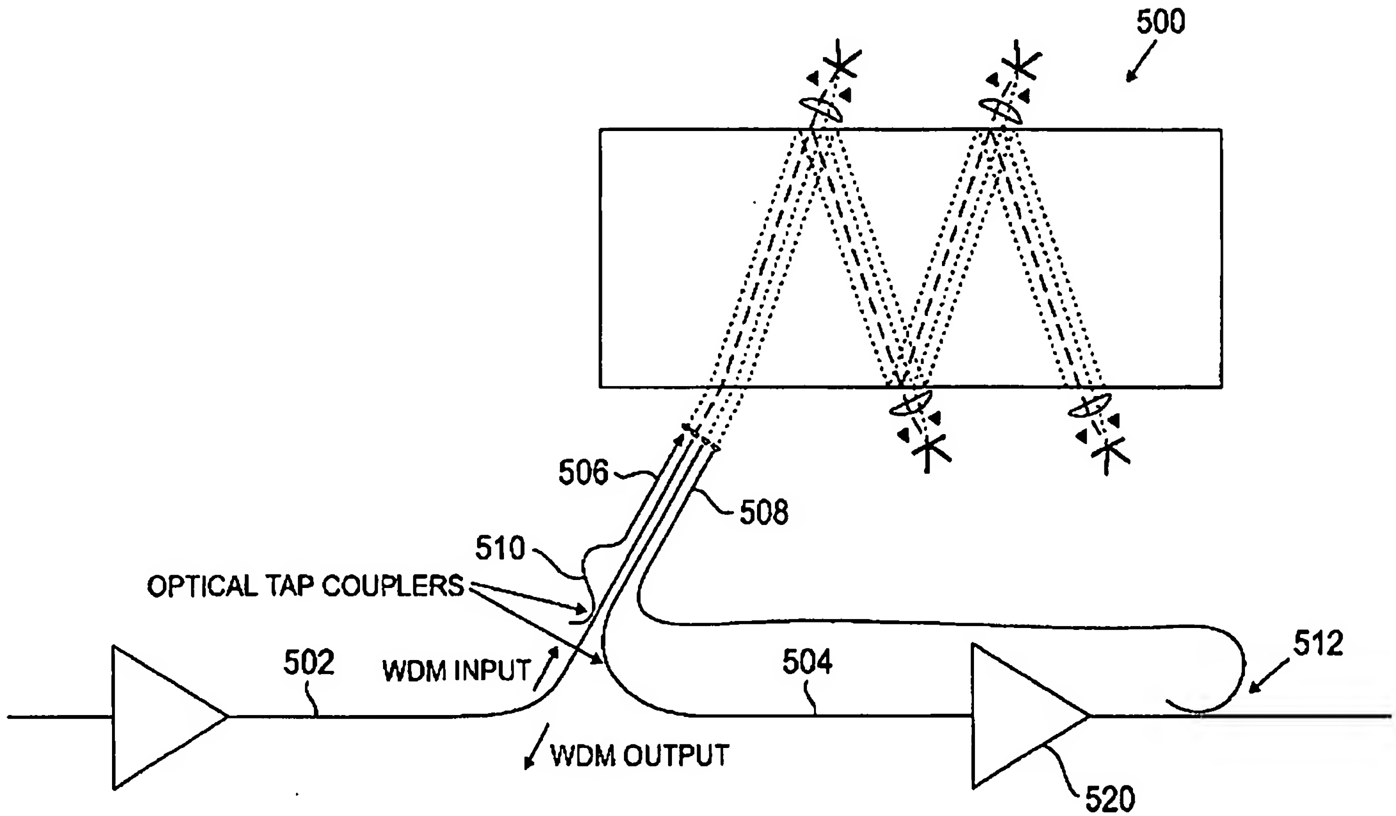


FIG. 5

Replacement Sheet

6/5/06 Sk



OPTICAL TAP CONFIGURATION TO MONITOR ANY INPUT AND OUTPUT PORTS ON A PER WAVELENGTH BASIS WHERE OUTPUT PORT IS AFTER AN OPTICAL AMPLIFIER, ENABLING GAIN FLATTENING OF AMPLIFIER

FIG. 6

6/5/06 sh

Replacement Sheet

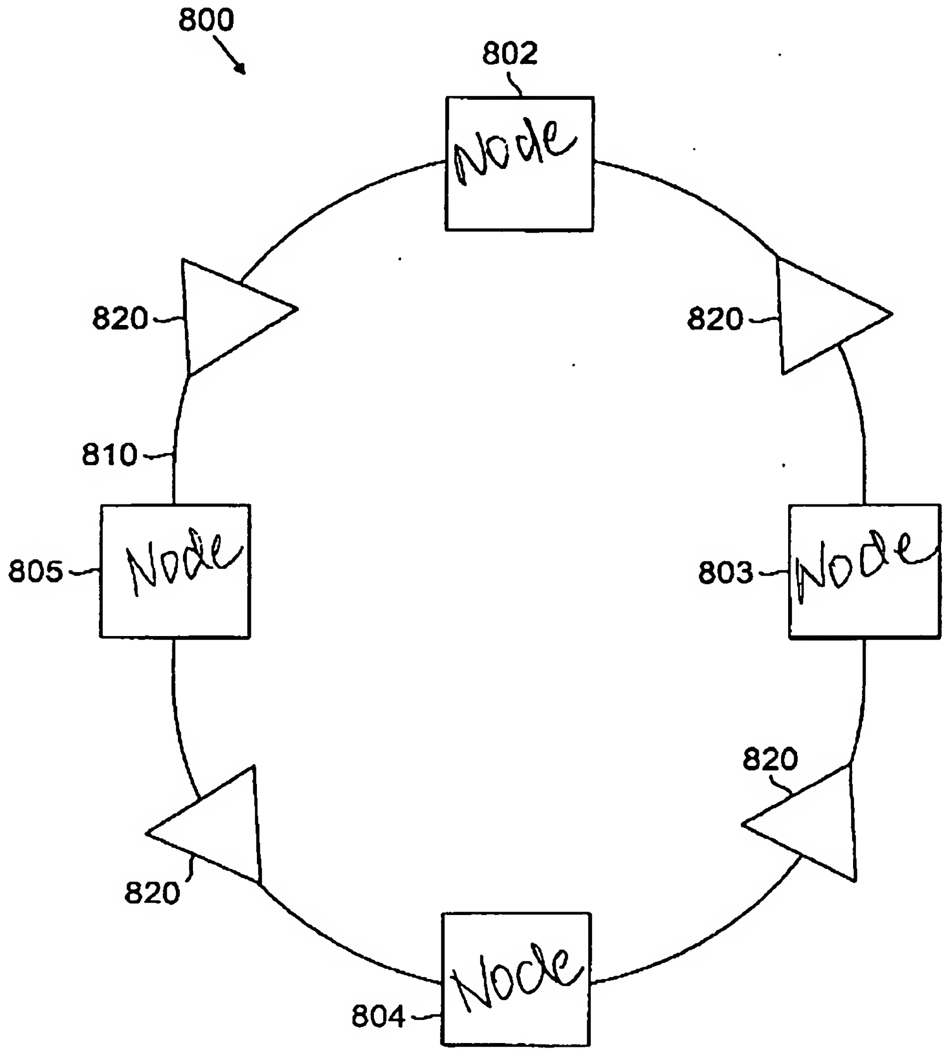


FIG. 7